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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/604,065	06/25/2003	Masuhiro Natsuhara	39.015-AG	1064

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EXAMINER	
KACKAR, RAM N	

ART UNIT	PAPER NUMBER
1763	

DATE MAILED: 07/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/604,065	NATSUHARA ET AL.	
	Examiner	Art Unit	
	Ram N. Kackar	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 June 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *9/19/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/1/2006 has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims 1 and 3 are rejected under 35 U.S.C. 102(b) as being anticipated by Kawanabe et al (US 6133557).**

Kawanabe et al disclose a sintered aluminum nitride (Abstract) wafer holder having an electrical circuit inside it (Fig 3A-12) and electrodes to supply power to the circuit (13). The wafer holder is 200mm diameter and 10mm thick (Col 13 lines 53-55). The electrodes supplying power to the circuit appear to be at the corners. The 10% of thickness is 1mm. The spacing between the electrodes therefore would be several times the minimum required distance. Further the aluminum nitride could be up to 99.8% pure (Col 12 lines 34-45) and lack of impurities make

it superior in corrosion resistance. Impurities of metal like Fe are preferred to be less than 2000 ppm. With slightly less purity it could have oxygen as an oxide sintering aid (Col 12 lines 46-54). The proportion of oxygen with oxide sintering aid of a range of 0.5- 20 wt% could be less than 2%.

The limitation of the temperature uniformity being within ±1 percent is an intended use limitation.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawanabe et al (US 6133557) in view of Shamoulian et al (US 6572814).

Kawanabe et al disclose a sintered aluminum nitride (Abstract) wafer holder having an electrical circuit inside it (Fig 3A-12) and electrodes to supply power to the circuit (13). The wafer holder is 200mm diameter and 10mm thick (Col 13 lines 53-55). The electrodes supplying power to the circuit appear to be at the corners. The 10% of thickness is 1mm. The spacing between the electrodes therefore would be several times the minimum required distance. Further the aluminum nitride could be up to 99.8% pure (Col 12 lines 34-45) and lack of impurities make it superior in corrosion resistance. Impurities of metal like Fe are preferred to be less than 2000 ppm. With slightly less purity it could have oxygen as an oxide sintering aid (Col 12 lines 46-

54). The proportion of oxygen with oxide sintering aid of a range of 0.5- 20 wt% could be less than 2% .

Kawanabe et al do not disclose the material of the electrode supplying power to the heater element.

Shamoulian et al disclose that the electrodes for supplying power to electrodes could be tungsten or molybdenum (Col 7 lines 14-18).

Therefore it would have been obvious for one of ordinary skill in the art to have power supply electrodes to be made of tungsten or molybdenum for their use at high temperatures.

6. **Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Niori et al (US 5280156) in view of Kawanabe et al (US 6133557).**

Niori et al disclose a wafer holder, which could be of aluminum nitride having an electrical circuit inside it (Fig 8) and electrodes to supply power to the heating circuit (8) and an electrode to supply power to the electrostatic chuck (7A). The electrodes supplying power to the heating circuit appear to be at the periphery (8) and to the chuck at the center. The 10% of thickness would typically be 1-2 mm. The spacing between the electrodes therefore (typically 75-100 mm) would be several times the minimum required distance. The material of the wire 8 is disclosed to be tungsten.

Niori et al do not disclose the purity of aluminum nitride wafer holder.

Kawanabe et al disclose a sintered aluminum nitride (Abstract) wafer holder having an electrical circuit inside it (Fig 3A-12) and electrodes to supply power to the circuit (13). Further the aluminum nitride could be up to 99.8% pure (Col 12 lines 34-45) and lack of impurities make

it superior in corrosion resistance. Impurities of metal like Fe are preferred to be less than 2000 ppm. With slightly less purity it could have oxygen as an oxide sintering aid (Col 12 lines 46-54). The proportion of oxygen with oxide sintering aid of a range of 0.5- 20 wt% could be less than 2%.

Therefore it would have been obvious for one of ordinary skill in the art to have a highly pure sintered aluminum nitride wafer holder for its corrosion resistance and oxygen for sintering aid.

Response to Arguments

Applicant's arguments filed 6/1/2006 have been fully considered but they are not persuasive.

Applicant's arguments are moot in view of the grounds of rejection as above.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hiramatsu et al (US 6891263) teaches that sintered aluminum nitride substrate holders have superior corrosion resistance and high thermal conductivity. Oxygen helps for sintering but too high oxygen reduces thermal conductivity.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N. Kackar whose telephone number is 571 272 1436. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571 272 1435. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ram Kackar
Primary Examiner AU 1763